

### **REMARKS**

Prior to the present amendment, claims 1-9 and 13-14 were canceled. By the present amendment, applicants have amended claims 10-12 and 16-22. No new matter has been introduced by these amendments. Accordingly, claims 10-12 and 16-24 are under examination.

#### **Claim Objections**

On page 3 of the office action, the examiner objects claims 10-12, 15, and 17-24 for various informalities. In response, applicants have clarified claim 10, amended claims 11, 12, 15, and 17-24 in accordance with the examiner's suggestion, and removed the improper multiple dependency of claims 17-24. Applicants thank the examiner for his suggested amendments, and respectfully request reconsideration and withdrawal of the objections.

#### **Rejection under 35 U.S.C. § 112, second paragraph**

On page 4 of the office action, the examiner rejects claim 16 under 35 U.S.C. § 112, second paragraph. In response, applicants have amended claim 16 to add steps on how protein storage in a potato is increased. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**Rejections under 35 U.S.C. § 112, first paragraph**

On page 4 of the office action, the examiner rejects claims 16-24 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

Applicants respectfully disagree. Contrary to the examiner's assertions, the specification adequately provides steps for increasing protein storage in a potato. Claim 16 has been amended to include the steps. Claims 17-24 depend on claim 16.

For example, page 3, first full paragraph describes a potato having at least one *amf* allele, thereby increasing protein storage in the potato. Throughout the specification and on page 5, line 30, to page 6, line 5, the claimed steps of increasing protein storage in a potato are described, such as "crossing a first parent potato plant having at least one *amf*-allele with a second parent potato plant lacking an *amf*-allele to produce progeny;" "selecting and testing said progeny for the presence of at least one *amf*-allele and for protein content;" and "selecting progeny with at least one *amf*-allele with a protein content higher than detected in said first parent or said second parent."

With respect to the examiner's requirement that applicants provide evidence of heterologous proteins used in a method for increasing protein storage in a potato, applicants respectfully submit that such a requirement is not necessary to comply with the written description requirement.

The invention relates to the inventors' discovery that protein storage in a potato is increased if the potato has at least one *amf* allele. See paragraph bridging pages 2-3 of the specification. The specification discloses providing a gene encoding a heterologous protein to a transgenic potato plant that has at least one *amf* allele, whereby expression of the heterologous protein was increased. See, for example, page 12, line 23, to page 13, line 19. Accordingly, what is required for the claimed invention is possession of at least one *amf* allele.

Contrary to the examiner's interpretation of the invention on page 6 of the office action, the heterologous protein is not required to "actually increase protein storage in potato." For example, see page 3, lines 16-19, of the specification, which describes increasing protein storage in a potato:

Potatoes comprising an *amf* allele have essentially higher protein storage capacity than potatoes of otherwise similar genetic background having no *amf* gene. Potatoes homozygous for the *amf* allele are, speaking from the viewpoint of protein storage, preferred.

Applicants respectfully request reconsideration and withdrawal of the rejections.

**Rejection under 35 U.S.C. § 103(a)**

On page 7 of the office action, the examiner rejects claims 10-12 and 15-24 as being unpatentable under §103(a) in view of Jacobsen (*Euphytica* 44:43-48, 1989), Jacobsen (*Euphytica* 53:247-253, 1991), Poehlman ("Breeding Potato," *Breeding Field Crops*, Chapter 21, pp. 419-433, 1995), and Farran (*Transgenic Research* 11:337-346, 2002).

Applicants respectfully disagree. With regard to independent claims 10 and 16, the examiner combines Jacobsen (1989) with Jacobsen (1991) and Poehlman for asserting obviousness.

Jacobsen 1989 and 1991 allegedly teach breeding plants with respect to the *amf* allele. On page 8 of the office action, the examiner acknowledges that "Jacobsen et al do not teach selecting for higher protein content." The examiner cites Poehlman to rectify the deficiencies of Jacobsen 1989 and 1991. However, as acknowledged by the examiner, Poehlman states on page 432 that "[m]ore breeding work needs to be done on improving nutrient content" because "lack of protein is a serious problem." Poehlman, thus, fails to rectify the deficiencies of Jacobsen 1989 and 1991, which include, *inter alia*, a lack of teaching on selecting progeny having at least one *amf* allele and higher protein content.

Furthermore, Poehlman teaches the elusiveness of identifying a method whereby nutrients or protein content in plants is increased: "[m]ore breeding work needs to be done on improving nutrient content" because "lack of protein is a serious problem." Accordingly, but for the inventors' surprising discovery, one skilled in the art reading the combined teachings of Jacobsen (1989) with Jacobsen (1991) and Poehlman would not have arrived at predictable results nor arrived at the claimed invention. See also, for example, *MPEP* § 2141 (III). The cited references fail to provide any reasonable expectation of success.

Moreover, Poehlman was published in 1995, which was several years after the publication of Jacobsen 1989 and 1991. Jacobsen 1989 and 1991 allegedly teach breeding plants with respect to the *amf* allele. Yet, as acknowledged by the examiner, Poehlman states on page 432 that “[m]ore breeding work needs to be done on improving nutrient content” because “lack of protein is a serious problem.” Accordingly, Poehlman renders the teachings of Jacobsen 1989 and 1991 unsatisfactory for the claimed method, which includes selecting progeny having at least one *amf* allele and higher protein content. Therefore, the combination of references teaches away from the invention.

For the forgoing reasons, the combination of Jacobsen (1989) with Jacobsen (1991) and Poehlman fails to obviate the claimed invention. The combination of cited references also fails to obviate claims 11-12, 15, 17-24, which depend on either claim 10 or 16, for the same reasons above. There is a lack of suggestion to combine the references, a lack of reasonable expectation of success in arriving at the claimed invention, and a teaching away from the claimed invention. Therefore, the claimed invention is not unpatentable under 35 U.S.C. § 103(a). Applicants respectfully request reconsideration and withdrawal of the rejections.

With respect to claims 23 and 24, in which the examiner cites Farran. Farran fails to rectify the deficiencies of Jacobsen (1989) with Jacobsen (1991) and Poehlman. For example, it fails to teach or suggest selecting progeny having at least one *amf* allele and higher protein content. In fact, Farran teaches away from the claimed invention. Farran states on page 341, first sentence of the last paragraph that “It is not easy to compare the highest [albumin protein] levels reported here with those obtained in potato for other proteins...” Accordingly, one skilled in the art reading Farran would not have had any reason to combine the teachings of Farran with the remaining art references since Farran discourages an extrapolation or comparison of its teachings to other proteins with any reasonable expectation of success. There lacks any evidence or suggestion that a simple substitution of any heterologous protein for the albumin protein taught in Farran would yield predictable results and arrival at the claimed invention. See also, for example, *MPEP* § 2141 (III).

Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

**Conclusion**

In view of the foregoing amendments and remarks, entry of the amendments and favorable consideration of the claims are respectfully requested. If the examiner has any questions or concerns regarding this amendment, he is invited to contact the undersigned at the telephone number listed below.

If any fees are due or any over overpayment made in connection with this submission, please charge or credit our Deposit Account No.: 08-2461.

Respectfully submitted,

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